PATENT COOPERATION TREATY

PCT

REC'D 03 NOV 2004
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 47231+A	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IT 03/00716	International filing date *(day/month/year)* 05.11.2003	Priority date *(day/month/year)* 05.11.2002
International Patent Classification (IPC) or both national classification and IPC B32B27/30		
Applicant VISMORE COMPANY S.A.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
30.04.2004	02.11.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Hutton, D Telephone No. +49 89 2399-8660

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IT 03/00716

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

2-5, 7-18	as originally filed
1, 6	filed with telefax on 19.10.2004

Claims, Numbers

1-15	filed with telefax on 19.10.2004

Drawings, Sheets

1/3-3/3	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	7,9-13,15
	No:	Claims	1-6,8,14
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations

   see separate sheet

Section V. Reasoned statement under Rule 66.2(a) (ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement.

Reference is made to the following cited in the International Search Report (ISR) and are referrred to as document (D) in the order in which they appear in this Report.

Novelty and Inventive Step.

Claims are directed to stretchable synthetic resin films (claim 1).

Claim 1 is concerns a stretchable synthetic resin film , which can be used for packaging foodstuffs, characterized in that it comprises main layer of polyvinyl chloride (PVC) with a high content of exclusively polymer plasticizers of the PPA type and the like, and outer layers of non-toxic thermoplastic synthetic resin capable of preventing the transmission of particles present in the PVC.

None of the cited documents disclose the use of polymeric plasticisers to plasticise PVC in such laminates.

In considering the presence of an Inventive Step document D1 is taken to represent the closest prior art.

D1 teaches elastic multilayer films for packaging poultry - comprises layers of plasticised PVC and EVA copolymer. A film comprising a plasticised PVC layer with a plasticiser content of 35-40 phr; and an EVAc copolymer layer contg. 16-20 wt. % vinyl acetateis taught. Preferably the PVC layer has a thickness of 1.75-2 mils and the EVA layer a thickness of 0.5-0.75 mils.

The films of the present application differ essentially from those of D1 in the use of a polypropylene adipate (PPA) plasticiser in the PVC layer.

This apparently leads to films with lower levels of plasticiser migration.

However the use of polymeric plasticisers in general and PPA in particular for the plasticisation of PVC is known inter alia from documents D2 and D3, thus the substitution of the plasticisers used in D1 by such polymeric plasticisers must be regarded as an obvious measure to reduce problems due to plasticiser migration and not as involving the presence of an Inventive Step, thus no Inventive Step can be discerned in the subject-matter of present claims 1-6,8,14 (the addition of such additives would appear to be conventional in the art) and 15.

Section VIII. Certain observations on the international application

(i) As the exact nature of a product referred to only by its trade-name may change within the life cycle of such a product and any patent granted such references are regarded as

unclear (cf. present claim 6).

Stretchable thermoplastic resin film, for use in the packaging of food

DESCRIPTION

The wrapping or packaging of fresh products – such as meats, cheeses, fruit, vegetables and various other products – in supermarkets or packaging centres has hitherto been carried out using stretchable plasticized PVC (polyvinyl chloride) film, which is applied to polystyrene, wood pulp, or cardboard trays and similar containers of rigid plastic.

Stretchable PVC film is known as "stretch" film or "cling film".

US 4.156.749 STANLEY et al. teaches multilyer films with layers of plasticized PVC and EVA copolymers. From JIMENEZ A ET AL : « Thermal degradation of poly(vinyl chloride) plastisols based on low-migration polymeric plasticizers" POLYMER DEGRADATION AND STABILITY, BARKING, GB, vol. 73, no. 3, 2001 pages 447-453, and from HOWICK C: "Plasticizers for poly(vinyl chloride)" - PROGRESS IN RUBBER AND PLASTICS TECHNOLOGY, PLASTICS AND RUBBER INSTITUTE is known the use of polymeric plasticizers for PVC.

In order to obtain the appropriate and necessary chemical/physical and mechanical characteristics for stretchable PVC film it is necessary to add many other chemical substances to the PVC-based thermoplastic resin such as

- stabilizers to light and heat,
- monomeric and/or polymeric plasticizers,
- internal and external lubricants,
- coloring agents, etc.

The mixtures or "compounds" so obtained are then extruded using systems known in the art, carried out using various top down or bottom up extrusion technologies, with a rotating extrusion head or rotating collection calendar or rotating extruder platform. All these systems have been known to those skilled in the art for a long time.

The stretchable PVC film must have special characteristics, including those shown in the table below. Particularly important is permeability to oxygen, as the film must maintain the bright red color of fresh meat during the normal period of exposure to the public for sale. The choice and quantity of plasticizers is important for achieving this characteristic.

packaging stage, which is mainly automatic. In fact with polyethylene and other films major problems have arisen in connection with the use of automatic or semi-automatic machines, and even manual machines.

Substantially the subject of the invention is a stretchable film of synthetic resin which can be used for the packaging of food, characterized in that it comprises an inner layer of polyvinyl chloride (PVC) with a content of exclusively polimeric plasticizers and at least two opposite outer layers of synthetic non-toxic thermoplastic resins capable of preventing the transmission of particles present in the PVC.

Production of the abovementioned article can easily be achieved using the coextrusion technique.

The said thin outer thickness or thicknesses may comprise plastics substances included in the group comprising: ethylene-vinyl acetate (EVA), expandable polystyrene (PS), polyethylene (PE), ionomer resins (Surlyn), polybutadiene and other thermoplastics.

Thus according to the invention it is provided that the predominant presence of PVC with the chemical and physical properties which are specific to this material should be retained and – in order to overcome the problems of the transfer of substances added to the PVC resin (which would migrate directly from the film to the packaged product) and to maintain the special characteristics of the stretchable PVC film – the stretchable PVC film is coextruded through bubble or flathead with two other opposite (minimal) layers outside the PVC of other thermoplastics materials such as ethylene-vinyl acetate (EVA), stretchable polystyrene (PS, of the Styroflex type from BASF), ionomer resins such as "Surlyn" (from DuPont), polybutadiene, and various others which prevent the migration of particles present in the PVC and which are not toxic, as envisaged by the present legislation substantially adopted in many countries.

Advantageously the polymeric plasticizers which can be used to implement the invention are polyesters of sebacic, adipic and azelaic acids, and glycols, because, in addition to being non-toxic and therefore capable of use in contact with foods, they are non-extractable on account of their high molecular weight and their chemical nature.

It has been established that the higher the quantity of plasticizer used,

CLAIMS

1. A stretchable synthetic resin film, which can be used for the packaging of foodstuffs, characterized in that it comprises an inner layer of polyvinyl chloride (PVC) with a content of exclusively polymeric plasticizers and at least two opposite outer layers of non-toxic thermoplastic synthetic resin capable of preventing the transmission of particles present in the PVC.

2. Film according to claim 1, characterized in that said outer layers are comprised of substances included in the group of resins such as ethylene-vinyl acetate (EVA), stretchable polystyrene (PS), polyethylene (PE), ionomer resins, polybutadiene.

3. Film according to claim 1 or 2, characterized in that the inner layer has a thickness of the order of 8 μm to 20 μm and the outer layers have thicknesses from 2 μm to 5 μm.

4. Film according to at least one of claims 1, 2, and 3, characterized in that the polymeric plasticizer in the intermediate layer of PVC is present in a quantity of at least 38% or more with respect to the PVC (by weight).

5. Film according to at least claim 3, characterized in that the polymeric plasticizer present in the inner layer is selected from one or more of the group comprising polyesters of sebacic acid, adipic acid and azelaic acid and glycols.

6. Film according to at least claim 3 or 4, characterized in that the polymeric plasticizer is selected from the plasticizers HEXAPLAS and SANTICIZER 438 or mixtures of these and/or PRIPLAST 3149, and others.

7. Film according to at least claims 1 and 2, characterized in that an EVA with a vinyl acetate content of less than 10% is used for the outer layers.

8. Film according to at least claims 1 and 2, characterized in that it comprises EVA-PVC-EVA.

9. Film according to at least claim 2, characterized in that it comprises PS-PVC-PS, all stretchable layers.

10. Film according to claim 1, characterized in that it comprises PS-PVC-EVA.

11. Film according to at least claim 1, characterized in that it comprises PE-PVC-PE.

12. Film according to at least claim 1, characterized in that it comprises PE-PVC-PS.

13. Film according to at least claim 1, characterized in that it comprises PE-PVC-EVA.

14. Film according to at least one of the preceding claims, characterized in that an antifogging substance (lipophilic and hydrophilic anticondensation agent) is added.

15. Film according to at least one of the preceding claims, characterized in that it is obtained by tubular bubble coextrusion.